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# HELMINTHOLOGICAL ABSTRACTS

*incorporating*  
BIBLIOGRAPHY OF HELMINTHOLOGY  
For the Year 1943.



IMPERIAL BUREAU OF AGRICULTURAL PARASITOLOGY  
(HELMINTHOLOGY)

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# HELMINTHOLOGICAL ABSTRACTS

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FOR THE YEAR 1943.

Vol. XII, Part I.

## 1—Agricultural Journal. Department of Agriculture, Fiji.

- a. HALL, H. T. B., 1943.—“Parasitic worms from birds.” 14 (1), 20.

(1a) *Syngamus trachea* from fowls, and *Hymenolepis* sp. in *Acridotheres tristis* are recorded from Fiji. R.T.L.

## 2—American Journal of Digestive Diseases and Nutrition.

- a. ROMEU CANÇADO, J., 1943.—“Incidence of intestinal parasites in a tropical area of Brazil. Figures based on the examination of the stools of 2,500 patients.” 10 (3), 98.

## 3—American Journal of Diseases of Children.

- a. CRAM, E. B., 1943.—“Studies on oxyuriasis. XXVIII. Summary and conclusions.” 65 (1), 46-59.

(3a) Cram summarizes the data that have been obtained from an investigation into the importance of oxyuriasis in the United States. Details of the work done have been already submitted by a number of individual workers in a number of journals. The biology of the parasite has been examined; an improved method of diagnosis has been described; methods of dealing with the eggs have been considered, but the evidence suggests that preventive measures are not sufficient to control the spread of the infestation. Treatment with gentian violet is effective. P.A.C.

## 4—American Journal of Hygiene.

- a. GOULD, S. E., 1943.—“Immunologic reactions in subclinical trichinosis.” 37 (1), 1-18.  
b. CHANDLER, A. C., 1943.—“Studies on the nutrition of tapeworms.” 37 (2), 121-130.  
c. SUMMERS, W. A., 1943.—“Experimental studies on the larval development of *Dirofilaria immitis* in certain insects.” 37 (2), 173-178.  
d. LARSH, jr., J. E., 1943.—“Serological studies on the mouse strain of the dwarf tapeworm, *Hymenolepis nana* var. *fraterna*.” 37 (3), 289-293.

(4a) Gould finds that the skin response to the intradermal test in trichinosis is less in older people than in younger. This may be due in part to the disappearance of antibodies or to their non-development. The intradermal test is not particularly useful in determining old subclinical disease, and it is suggested that the larvae may persist longer than the antibodies. The precipitin test is probably most useful in recent infestations. The eosinophilia found in early stages of the disease seems to disappear while the intradermal and precipitin reactions are still positive. P.A.C.

(4b) Chandler has made experiments to determine whether cestodes may obtain some part of their nourishment from the tissues of the host, using *Hymenolepis diminuta* in laboratory-bred albino rats. The parasite can absorb protein in some way from host tissue but is dependent on the diet of the host for carbohydrates. Absence of Vitamin G has a deleterious effect on the parasite in female hosts but not in male hosts: it is connected in some way with protein metabolism. He suggests that the toxic effect of cestode infestations may be due in part to absorption of protein and vitamins. P.A.C.



(4c) From experimental studies in New Orleans, only 4 species of mosquitoes have been found to be susceptible to infection and so to function as potential transmitters of *Dirofilaria immitis*. Three species of fleas which were also studied were found to acquire infection in nature as well as under experimental conditions. *Ctenocephalides canis* was the most susceptible. The fleas, unlike the mosquitoes, showed an immunity to tissue damage by the larvae, and their more intimate association with the definitive host suggests that they may be more important as transmitters than has hitherto been acknowledged. R.T.L.

(4d) Specific agglutinating, precipitating and complement fixing antibodies were elaborated in white mice infected with *Hymenolepis nana* var. *fraterna*. Two rabbits repeatedly injected with the worm antigen showed complement fixing antibodies. Forssman's heterogenetic antigen is absent in this cestode. R.T.L.

#### 5—American Journal of Public Health.

- a. WRIGHT, W. H., 1943.—“Public health problems concerned in the disposal of garbage by feeding it to swine.” 33 (3), 208–220.

#### 6—American Journal of Tropical Medicine.

- a. HEADLEE, W. H., 1943.—“Pinworm infections among patients of an Indiana hospital for children.” 23 (2), 281–284.

(6a) Of 240 patients (128 males and 112 females) in an Indiana children's hospital examined for *Enterobius vermicularis* by a single NIH swab, 39 (20 males and 19 females), or 16.3 per cent., were positive. The presence or absence of *E. vermicularis* was shown to have no effect on eosinophil counts. A.E.F.

#### 7—American Journal of Veterinary Research.

- a. KATES, K. C., 1943.—“Development of the swine thorn-headed worm, *Macracanthorhynchus hirudinaceus*, in its intermediate host.” 4 (11), 173–181.

(7a) The development of *Macracanthorhynchus hirudinaceus* in the grubs of *Cotinus nitida* and of beetles of the genus *Phyllophaga* is normally completed in 60 to 90 days at 75°F. but under natural soil conditions at Beltsville, Md., during summer it takes about 3 months. The eight stages of development are described, illustrated and tabulated. R.T.L.

#### 8—Annals of Applied Biology.

- a. GEMMELL, A. R., 1943.—“The resistance of potato varieties to *Heterodera schachtii* Schmidt, the potato-root eelworm.” 30 (1), 67–70.

(8a) Gemmell compared eelworm cysts produced on the roots of four varieties of potato—Epicure, Doon Star, Majestic, and Golden Wonder. Plants of the four varieties were grown in pots and infected with equal numbers of *Heterodera* larvae. The number of cysts developed on Epicure was only one third of that on Golden Wonder, while the mean diameter of the cysts from Epicure was significantly less than that of cysts from Golden Wonder: Doon Star and Majestic cysts were intermediate in numbers and the former were even smaller than those from Epicure. In hatching experiments with 50 separate cysts from each variety of potato, fewer larvae hatched from Epicure and Doon Star cysts than from Majestic and Golden Wonder, and about 20% of the cysts gave no larvae as compared with 1 to 2% of the Majestic and Golden Wonder cysts. From this evidence Gemmell concludes that a certain degree of resistance to the unlimited development of eelworm may be shown by some varieties of potato, and that this is shown in greater degree by Epicure and Doon Star than by Majestic and Golden Wonder. M.T.F.

#### 9—Annals of Surgery.

- a. BENSON, C. D., EVANS, jr., W. A. & ZUELZER, W. W., 1943.—“Echinococcus cyst of lung exhibiting unusual radiologic and surgical features.” 117 (2), 268–277.



## 10—Archives of Pathology.

- a. PASTERNAK, J. G., 1943.—“Filarial epididymofuniculitis.” 35 (3), 414-419.

## 11—Australian Veterinary Journal.

- a. GORDON, H. McL., 1943.—“The minimum dose of phenothiazine required to remove 100 per cent. of *Haemonchus contortus* from sheep.” 19 (1), 29-30.

(11a) From experiments with six 18-months-old sheep weighing about 30 kg., Gordon concludes that doses exceeding 6 g. of phenothiazine would almost invariably give 100% efficiency against *Haemonchus contortus*. Older sheep would probably require about 10 g. to give similar results.

D.O.M.

## 12—Biological Bulletin.

- a. GOODCHILD, C. G., 1943.—“The life-history of *Phyllodistomum solidum* Rankin, 1937, with observations on the morphology, development, and taxonomy of the Gorgoderinae (Trematoda).” 84 (1), 59-86.

(12a) Goodchild has now described and figured the complete life-history of *Phyllodistomum solidum*, which has been reared in the laboratory. The eggs, laid by the adult in the urinary bladder of the urodele *Desmognathus fuscus fuscus*, immediately hatch into miracidia which, as they penetrate the gills of the clam, *Pisidium abditum*, shed the ectodermal cells and develop into mother sporocysts; these produce 6 to 8 daughter sporocysts, and these again, cercariae [= *Cercaria conica* Goodchild, 1939: see Helm. Abs., Vol. VIII, No. 171c]. By their activity the cercariae attract, and are eaten by, dragon-fly nymphs (*Ischnura verticalis*, etc.). They immediately penetrate the intestine and the metacercarial cyst is formed in 4 minutes: they become infective to salamanders after 24 hours. Excystment occurs in the small intestine, whence the young worms may find their way to the bladder in 24 hours. Here they become mature in 3 months, eggs being laid in the early spring. The cycle is completed in 12 months. The phylogeny and life-histories of the stylet and non-stylet gorgoderid cercariae are discussed and a key to them is given. Intergeneric relationships and the significance of the form of the excretory vessels are reviewed: *Gorgoderina schistorchis* Steelman and *G. tenua* Rankin are transferred to the genus *Phyllodistomum*.

N.G.S.

## 13—Boletín del Instituto de Clínica Quirúrgica. Universidad de Buenos Aires.

- a. RIVAS, C. I. & MOREL, C., 1943.—“Hidatidosis extraósea a exteriorización endotorácica.” 19 (155), 167-173.

## 14—British Medical Journal.

- a. REILLY, M. C. T., 1943.—“Removal of filaria worm from eye.” Year 1943, 1 (4281), 103.  
 b. LEEDS, C. R. D., 1943.—“Filaria worm in eye.” [Correspondence.] Year 1943, 1 (4283), 169-170.  
 c. CHARTRES, E. A., 1943.—“Filaria worm in the eye.” [Correspondence.] Year 1943, 1 (4286), 269.  
 d. SIMPSON, A., 1943.—“Filaria worm in eye.” Year 1943, 1 (4290), 402.  
 e. DARBYSHIRE, F. I., 1943.—“Filaria worm in the eye.” Year 1943, 1 (4298), 654.

(14d) Simpson describes the removal on three occasions of *Loa loa* from the eye of a European who had left Nigeria 7 years previously. Small swellings continued to appear in the breast and the legs.

R.T.L.

## 15—Canadian Journal of Public Health.

- a. FALLIS, A. M., 1943.—“Use of the Waring blender to separate small parasites from tissue.” 34 (1), 44.

(15a) The Waring Blender apparatus has been used successfully to separate *Ascaris lumbricoides* larvae from intestine, liver and lung tissues, and *Trichinella spiralis* larvae from muscle. Tissues are placed in a small quantity of saline and the apparatus is run for a short



time until the tissue is broken into small particles. The larvae are then recovered by sedimenting with a centrifuge and the supernatant fluid is decanted off. By further sedimenting and decanting in saline the larvae are separated from the tissue debris. R.T.L.

#### 16—Canadian Medical Association Journal.

- a. KUITUNEN-EKBAUM, E., 1943.—“The incidence of enterobiasis in Toronto.” 48 (3), 229-231.
- b. STERN, K. & DANCEY, T. E., 1943.—“Acute psychosis associated with trichiniasis.” 48 (3), 235-237.

(16a) 60% of 300 children and 52% of 56 adults in Toronto were found to be infected with *Enterobius vermicularis*. Most of the adults were parents of the children. The NIH swab was used and an average of 6 swabs per person was examined. R.T.L.

#### 17—Chirurg.

- a. RACIC, J., 1943.—“Massenhafter Spulwurmbefall im Röntgenbild nachgewiesen.” 15 (3), 77-79.

#### 18—Deutsche Tropenmedizinische Zeitschrift.

- a. SCHILL, E., 1943.—“Pharmakologische Untersuchungen an Askariden.” 47 (5), 105-122.

(18a) Schill has studied the movements of *Ascaris lumbricoides* (pig strain) in water and intestinal contents, alone, or containing drugs. Central nervous stimulants, hypnotics or narcotics, with the exception of paraldehyde, did not affect movement. Oil of chenopodium, santonin and hexylresorcinol inactivated worms in water but had little effect in intestinal contents. Alcohol, active in water and intestinal contents, increased the effect of the anthelmintics. Oil of chenopodium was most active in chloroform water containing alcohol and paraldehyde. The point of entry of drugs into worms was studied by examining movements after immersing the anterior or posterior ends in drugs. It is claimed that entry was gained *per os* except in the case of hexylresorcinol which acted on both ends of the worm. Staining with methylene blue was said to show up the penetration of drugs also. Thus, the posterior ends of worms which had been exposed to a drug did not stain, whereas, under similar conditions, the mouth became blue. W.P.R.

#### 19—Indian Medical Gazette.

- a. MUKERJI, A. K. & MAPLESTONE, P. A., 1943.—“Preservation of hookworm ova in faeces.” 78 (3), 136-141.
- b. SEN, A. R., 1943.—“Ascariasis simulating acute abdomen. Two case reports.” 78 (3), 151-152.

(19a) A 1% solution of common salt preserves hookworm eggs for three weeks when the stool is diluted with this in the proportion of 1 in 30. This includes specimens to be transmitted to a central laboratory in good condition for examination. For safety, the cork should be tied to the neck of the container. R.T.L.

#### 20—Indian Veterinary Journal.

- a. SHARMA, K. N., 1943.—“On some helminths from Burmese ducks (*Anas boschas*) new to science.” 19 (5), 227-232.
- b. SRIVASTAVA, R. N., 1943.—“Bovine nasal schistosomiasis.” [Correspondence.] 19 (5), 278.

(20a) Sharma at Rangoon describes from Burmese ducks one new trematode species, *Mehlisia gatesi* n. sp., which resembles *M. acuminata* except in size of suckers, absence of vitelline follicles on the entire surface posterior to the posterior testis, and the size of the eggs. He also describes and illustrates as new 5 tapeworms: *Hymenolepis apcaris* n. sp., *H. infrequens* n. sp., *H. jamunica* n. sp., *H. meggitti* n. sp., and *H. rangoonica* n. sp. R.T.L.



(20b) In a bullock with nasal schistosomiasis sudden death is recorded following a second intravenous injection of a 4% solution of tartar emetic which had been given a week after the first injection.

R.T.L.

## 21—Journal of the American Medical Association.

- a. BLUM, B. B. & LILGA, H. V., 1943.—“Schistosomiasis infection: report of two cases found in northern Michigan.” 121 (2), 125-126.
- b. KOPPISCH, E., 1943.—“Manson's schistosomiasis.” 121 (12), 936-942.

(21a) These two cases of schistosomiasis which were diagnosed in Michigan were acquired in South Africa.

R.T.L.

## 22—Journal of the American Veterinary Medical Association.

- a. WHITLOCK, J. H., CALLAWAY, H. P. & JEPPESEN, Q. E., 1943.—“The relationship of diet to the development of haemonchosis in sheep.” 102 (790), 34-35.
- b. DICKEY, E. S., 1943.—“Trichinosis: as viewed by different interests.” 102 (794), 359-364.

(22a) Whitlock et al. are of the opinion that haemonchosis can only develop in sheep when the nutrition is disturbed. Sick sheep improved tremendously without treatment when fed good rations: egg counts were reduced so much that the difference must have been due in large part to elimination of worms. Probably deficiencies of vitamin A and of iron were responsible for the onset of disease.

P.A.C.

(22b) Only when public opinion leads to the abolition of feeding of uncooked garbage to pigs will trichinosis in the United States be brought under control. At present the incidence of clinical and subclinical trichinosis in man keeps pace with the incidence of swine trichinosis in the same areas.

R.T.L.

## 23—Journal of the Council for Scientific and Industrial Research. Australia.

- a. GORDON, H. McL., 1943.—“The anthelmintic efficiency of phenothiazine against immature *Trichostrongylus* spp. in sheep.” 16 (1), 1-4.

(23a) After infecting three groups of lambs with larvae of *Trichostrongylus* spp. Gordon administered phenothiazine to two of these groups at 10 days and 15 days respectively after infection. He found, by comparing the egg-counts from these lambs with those obtained from untreated controls, that the drug had a relatively low efficiency against the immature forms of *Trichostrongylus* spp.

D.O.M.

## 24—Journal of Laboratory and Clinical Medicine.

- a. LEVIN, M. B., 1943.—“Infestation with *Strongyloides stercoralis*.” 28 (6), 680-682.

(24a) Cases of strongyloidiasis in the Middle Atlantic States of U.S.A. have usually acquired infection in tropical or subtropical countries. The present case had always lived in Maryland except for a short visit to Virginia 20 years ago. There were a few indefinite symptoms. The interest of the paper lies in the photographs of the parasitic male.

R.T.L.

## 25—Journal of Parasitology.

- a. MELENEY, H. E., 1943.—“The rôle of parasitologists in World War II.” 29 (1), 1-7.
- b. FISCHTHAL, J. H., 1943.—“A description of *Phyllodistomum etheostomae* Fischthal, 1942 (Trematoda: Gorgoderidae) from percid fishes.” 29 (1), 7-9.
- c. WHITLOCK, J. H., 1943.—“Characteristics of the population available for bioassay of anthelmintics in *Nippostrongylus muris* infection in albino rats.” 29 (1), 42-47.
- d. WHITLOCK, J. H. & BLISS, C. I., 1943.—“A bioassay technique for anthelmintics.” 29 (1), 48-58.
- e. LARSH, jr., J. E., 1943.—“The relationship between the intestinal size of young mice and their susceptibility to infection with the cestode, *Hymenolepis nana* var. *fraterna*.” 29 (1), 61-64.
- f. BEAVER, P. C., 1943.—“Studies on *Protechinostoma mucronisertulatum*, n. g., n. n. (*Psilostomum reflexae* Feldman, 1941), a trematode (Echinostomidae) from the sora rail.” 29 (1), 65-70.
- g. HUNNINEN, A. V. & CABLE, R. M., 1943.—“The life history of *Lecithaster confusus* Odhner (Trematoda: Hemiuridae).” 29 (1), 71-79.



- h. CORT, W. W. & OLIVIER, L., 1943.—“The development of the larval stages of *Plagiorchis muris* Tanabe, 1922, in the first intermediate host.” 29 (2), 81-99.
- i. LINCICOME, D. R., 1943.—“Acanthocephala of the genus *Corynosoma* from the California sea-lion.” 29 (2), 102-106.
- j. CULBERTSON, J. T., 1943.—“Natural transmission of immunity against *Trichinella spiralis* from mother rats to their offspring.” 29 (2), 114-116.
- k. FISCHTHAL, J. H., 1943.—“Number of larvae and time required to produce active immunity in rats against *Trichinella spiralis*.” 29 (2), 123-126.
- l. VAN CLEAVE, H. J. & WILLIAMS, C. O., 1943.—“Maintenance of a trematode, *Aspidogaster conchicola*, outside the body of its natural host.” 29 (2), 127-130.
- m. FERGUSON, M. S., 1943.—“Development of eye flukes of fishes in the lenses of frogs, turtles, birds, and mammals.” 29 (2), 136-142.
- n. STUNKARD, H. W., 1943.—“A new trematode, *Dictyanguium chelydrae* (Microscaphidiidae = Angiodictyidae), from the snapping turtle, *Chelydra serpentina*.” 29 (2), 143-150.
- o. JONES, W. R. & JONES, H. A., 1943.—“Preliminary observations on the efficacy of a product from oil of rose geranium for the removal of intestinal parasites from dogs.” 29 (2), 151-152.
- p. ANNEREUX, R. F., 1943.—“*Opecoelina pharyngmagna* n. sp. (Trematoda) from the China rockfish.” 29 (2), 155-156.
- q. CHANDLER, A. C., 1943.—“A redescription of *Contracaecum habena* (Linton, 1900) Linton, 1934.” 29 (2), 156-157.
- r. CHANDLER, A. C., 1943.—“A case of canine strongyloidiasis in Texas.” 29 (2), 157-158.
- s. GOBLE, F. C., 1943.—“Notes on the adults of *Protostrongylus coburni* in the lungs of white-tailed deer.” 29 (2), 158.
- t. MORGAN, B. B., 1943.—“New host records of nematodes from Mustelidae (Carnivora).” 29 (2), 158-159.
- u. GRAHAM, E. & UHRICH, J., 1943.—“Animal parasites of the fox squirrel, *Sciurus niger rufiventris*, in southeastern Kansas.” 29 (2), 159-160.
- v. ROGERS, W. P., 1943.—“*Strongyloides planiceps*, new name for *S. cati* Rogers.” 29 (2), 160.

(25b) Fischthal describes *Phyllodistomum etheostomae* from the urinary bladder of *Etheostoma blennioides blennioides*, *Hadropterus maculatus* and *Percina caprodes semifasciata* from Michigan. It is distinguished from related species by the oral sucker being greater than the acetabulum, having two pairs of marginal undulations, a posterior notch, spreading uterus, elongated testes and small eggs. Amphitropy is frequent. N.G.S.

(25c) Whitlock has described a technique of known error for infecting rats with standard doses of *Nippostrongylus muris*. Subsequent worm-counts made on 11 groups of 10 rats showed two types of variation. Within each group the variation was larger than the binomial, but uniform and approaching the normal curve. Variation between groups was greater and unpredictable. It is considered that this method, utilizing figures from control animals, can be used to estimate initial populations in infected rats treated with anthelmintics. W.P.R.

(25d) Whitlock & Bliss describe a method for the bioassay of anthelmintics based on studies on the variations in the populations of *Nippostrongylus muris* in rats [see preceding abstract]. Dose-mortality curves for host and parasite have been determined using carbon tetrachloride as the test anthelmintic. It is suggested that anthelmintic activity may be evaluated as: 
$$\text{Chemotherapeutic Index} = 100 \left( \frac{\text{Lethal Dose killing 5\% of the host}}{\text{Effective Dose killing 95\% of the parasite}} \right)$$
 or as the expected host mortality corresponding to a required therapeutic effect. The statistical and biological technique is described in detail. W.P.R.

(25e) Young mice are very resistant to infestation with *Hymenolepis nana* var. *fraterna*. This has been shown to be due to the shortness of the intestine. Injections of prolactin encouraged the rapid development of the intestine in mice, which then became much more susceptible to infestation with *H. nana*, there being more time for the cysticeroids to hatch and establish themselves among the villi. P.A.C.

(25f) Beaver supplements the life-history studies of Feldman [see Helm. Abs., Vol. X, No. 254g] on a cercaria resembling *C. reflexa* Cort, but here proved to be that of *Protechinostoma mucronisertulatum* n. g., n. n. The cercariae in *Stagnicola palustris elodes* from Wisconsin develop in rediae, and emerge to encyst in either the same snail or in other species of pulmonates. Its range of laboratory hosts is narrow and it was reared with difficulty in albino mice; the field host is *Porzana carolina*. Supplementary descriptions are given for the various stages except the miracidium. N.G.S.



(25g) Hunninen & Cable demonstrate the life-history of *Lecithaster confusus*, a common parasite of marine fishes from Woods Hole, to which hosts they add *Fundulus heteroclitus*, *F. majalis* and *Aplites quadracus*, the last being used as the experimental host. The cystophorous cercariae, from rediae, in the snail *Odostomia trifida* were fed to the copepod *Acartia tonsa* in which metacercariae developed free in the body cavity. Fish ingesting infested copepods yielded adult worms in 9 days. A complete description of the excretory system is given which shows some aberrant features from the hemiurid pattern, and details of all stages are figured.

N.G.S.

(25h) From a detailed study of the sporocyst generations of *Plagiorchis muris* from *Stagnicola emarginata angulata*, from Michigan, Cort & Olivier have found that the mother sporocysts are unique in consisting of irregular lens-shaped masses of varying sizes, situated along the outer wall of the intestine. They are composed entirely of hundreds of daughter sporocysts, embedded in a matrix of "paletot" cells which form the wall of the mass and the persistent wall of the daughter sporocysts; these break away almost simultaneously and migrate along the vessels and ducts to the walls of organs and the digestive gland. (Those from mother sporocysts in the digestive gland are more restricted and may develop *in situ*.) Finally they become adherent and develop a great variety of forms—growth taking place from the two poles, which may be thickened or invaginated. A succession of cercariae are formed from a permanent germ mass by a special type of polyembryony, like that of strigeids, which continues until the death of the host: for owing to their position and inactivity, the daughter sporocysts cause no harm either to the young or adult snails.

N.G.S.

(25i) Lincicome describes *Corynosoma osmeri* from *Zalophus californianus*: it had previously been described from *Osmerus lanceolatus* and from *Phoca* sp. under the name *C. ambispinigerum* from Japanese waters. He also describes *C. obtusens* n. sp. from *Z. californianus*, a species which can be differentiated by the nature and arrangement of the proboscis hooks, by the distribution of the body spines and by the absence of body constrictions.

P.A.C.

(25j) Immunity to *Trichinella spiralis* can be transferred to young rats by the milk of immune mothers. Practically no immunity is transferred via the placenta before birth.

P.A.C.

(25k) Fischthal shows experimentally that a single small dose of *Trichinella spiralis* can set up a resistance in rats to further infestations. A dose of 80 larvae initially will set up some resistance after 14 days and as the initial dose is increased, the degree of resistance increases, reaching its maximum with 320 or 640 larvae. Practically no resistance is caused under 14 days. Adults in the intestine feel the effects of the initial doses and find difficulty in maturing and in larval production.

P.A.C.

(25l) Van Cleave & Williams have found that *Aspidogaster conchicola* can be kept alive at low temperatures for 75 days in mussel blood, and for shorter periods in tissue culture, and other media. Worms introduced into turtles per anum did not survive, but some survived up to 14 days when introduced directly into the stomach. No turtles were found naturally infected in Illinois, but 6 species of Unionidae were naturally infected.

N.G.S.

(25m) Ferguson has found that the cercariae of *Diplostomum flexicaudum* and another, which may be the same species, normally developing to metacercariae in the eyes of fresh-water fishes, are able to develop in the lenses of tadpoles, frogs, turtles, chicks, ducklings, mice, guinea-pigs and rabbits into normal metacercariae—as proved by the rearing of mature adults in chicks from metacercariae from a frog and guinea-pig. Blindness was sometimes caused in the experimental hosts, and the possibilities of their danger to man are discussed.

N.G.S.

(25n) *Dictyanguium chelydrae* n. g., n. sp. is described by Stunkard from adults and juveniles from the large intestine of *Chelydra serpentina* in Louisiana. The family is reviewed and the name Angiodictyidae is suppressed in favour of Microscaphidiidae. There is a discussion on the suckers, and lymph vessels and excretory systems in the relatives of *D. chelydrae* (which lacks lymph vessels): an emendment in the family diagnosis is thereby implied.

N.G.S.

(25o) A substance, consisting largely of citronellol, prepared from a sample of oil of rose



geranium, removed 100% of 46 ascarids from 10 dogs, 97% of 400 hookworms from 12 dogs, and 40% of 708 whipworms from 7 dogs. No clinical signs of toxicity were evidenced nor were there any lesions observable at autopsy. The product had a fragrance of rose perfume. The only test so far made on other animal hosts was one on a pig in which a dose at the rate of 0.5 c.c. per lb. body weight failed to remove *Ascaris lumbricoides* satisfactorily. R.T.L.

(25p) Annereaux describes *Opecoelina pharynmagna* n. sp. from *Sebastodes nebulosus* from California. It is distinguished by the pharynx being nearly as large as the oral sucker, a relatively short oesophagus, and an internal seminal vesicle. N.G.S.

(25s) Sections of lungs of white-tailed deer infected with *Protostrongylus coburni* indicate that the tissue changes are not attributable to the adult worms but to the presence of the eggs and larvae. R.T.L.

(25t) A number of new hosts are recorded, viz., *Mustela c. cicognani*, *M. r. rixosa* and *M. longicauda spadix* for *Physaloptera maxillaris*, *M. r. rixosa* for *Molineus patens*, *Martes a. americana* and *M. p. pennanti* for *Soboliphyme baturini*. R.T.L.

(25u) In 100 fox squirrels from Kansas the following helminths were found: *Catenotaenia* sp., *Taenia pisiformis*, *Heligmodendrium hassalli*, *Rictularia* sp. and *Ascaris* sp. R.T.L.

## 26—Journal of the Royal Army Medical Corps.

- a. ELLIOTT, W. G. M., 1943.—“Phenothiazine treatment of multiple intestinal helminthic infestations.” 80 (3), 156–159.

(26a) Writing from a general military hospital in West Africa, Elliott gives his experience of treating cases of multiple parasitic infestation of the intestine in 10 cases. After a special diet supplemented by glucose, Bemax and Marmite and preceded by sodium sulphate in half ounce doses on the evening and morning prior to treatment, 4 g. phenothiazine were given morning and evening for two days and 8 g. on the morning of the third day. Four hours after the last dose one ounce of sodium sulphate was given and the patient then put on full diet. None of the patients showed any signs of toxicity. The results which are shown in tabular form show that the treatment was effective against *Trichuris trichiura*, *Strongyloides stercoralis*, *Ancylostoma duodenale* and *Taenia saginata* in West African troops, many of whom were in a state of latent or manifest multiple vitamin deficiency. R.T.L.

## 27—Journal of the South African Veterinary Medical Association.

- a. CARMICHAEL, J. & BELL, F. R., 1943.—“Filariasis in dogs in Uganda.” 14 (1), 12–16.

(27a) Carmichael & Bell describe a case of ulcerative dermatitis in a dog in Uganda due to the presence of microfilariae in the blood. No adults were found at autopsy. The larvae are similar in length to those of *Acanthocheilonema dracunculoides*. P.A.C.

## 28—Journal of Tropical Medicine and Hygiene.

- a. HAWKING, F., 1943.—“The distribution of filaroid infections in East Africa: a review.” 45 (20), 159–165.  
b. CAWSTON, F. G., 1943.—“A consideration of the spine in ova of *Schistosoma*.” 45 (20), 165–166.  
c. MUMFORD, E. P. & MOHR, J. L., 1943.—“Preliminary report on the infectious diseases of enemy occupied territories. Part I: The Japanese Mandated Islands and Guam.” 46 (2), 15–23.

(28a) From a review of the literature Hawking concludes that *Wuchereria bancrofti* is rare or absent in the Arusha-Moshi region of Kenya but is common in the coastal regions of Kenya and Tanganyika, also in the area south of Lake Victoria, in the West Nile province of Uganda, and the region north of Lake Kioga. *Acanthocheilonema perstans* is very common in the Liwale region and to the north-west and south-west of Lake Victoria. *Onchocerca volvulus* occurs in the region north of Lake Victoria, both north and south of the Kavirondo Gulf, and as a small focus around Tukuyu and Njombe. Guinea-worm occurs only in the northern part of Uganda and *Loa loa* is virtually unknown in East Africa. R.T.L.



(28b) Cawston is of opinion that the spine of schistosome eggs can have little influence on the passage of the eggs through tissue. He puts forward the view that its function is related to the environment of the escaping miracidium. Those eggs which need to be hatched near molluscs of marsh environment are elongated or have a hook-like spine, while those needing a river-snail have oval or nearly round eggs which have small spines. R.T.L.

(28c) In the course of this summary of the incidence of disease in the Japanese Mandated Islands and in Guam, compiled from various sources, reference is made to helminth infections. Hookworm, *Ascaris* and *Trichuris* are said to be very common, and *Strongyloides stercoralis* has frequently been found. Infections with *Fasciola*, *Clonorchis* and *Paragonimus* have been reported occasionally and there is one record of dracontiasis. Filariasis, Oxyuris and cestode infections are rare. A.E.F.

## 29—Journal of the Washington Academy of Sciences.

- a. LUCKER, J. T., 1943.—“A redescription of *Typhlonema salomonis* Kreis (Nematoda).” 33 (1), 28–31.
- b. PRICE, E. W., 1943.—“North American monogenetic trematodes. VI. The family Diclidophoridae (Diclidophoroidea).” 33 (2), 44–54.
- c. LUCKER, J. T., 1943.—“A new trichostrongylid nematode from the stomachs of American squirrels.” 33 (3), 75–79.
- d. KRULL, W. H. & JACKSON, R. S., 1943.—“Observations on the route of migration of the common liver fluke, *Fasciola hepatica*, in the definitive host.” 33 (3), 79–82.

(29a) *Typhlonema salomonis* was first described by Kreis in 1938 on female specimens from skinks of the genus *Gecko*. Lucker now describes the male from *Mabuya megalura*. Whereas Kreis placed *Typhlonema* in the Oxyuroidea and in the subfamily Oxyurinae, Lucker is of opinion that it belongs to the Ascaridoidea and to the family Cosmocercidae, although *Typhlonema* is polymyarian whereas Cosmocercidae is meromyarian. R.T.L.

(29b) Price continues his systematic revision of the monogenetic trematodes and the redescription of North American species. The superfamily Diclidophoroidea is defined and divided into 6 families according to the type of framework supporting the posterior “suckers”. The family Diclidophoridae alone is dealt with here. It is composed of two subfamilies: Diclidophorinae Cerf. (used in a new sense) in which the “suckers” are clamp-like, and Cyclocotylinae n. subf. in which the “suckers” are cup-shaped. Diclidophorinae contains the following genera: *Diclidophora* Dies., (*D. denticulata*, redescr.); *Diclidophoroides maccallumi* n. g., n. sp. (created for *D. merlangi* of MacCallum), this genus is to include other species in which the haptor is distinctly set off from the body; and *Octodactylus* Dalyell (revived, for those *Diclidophora* spp. in which all the testes are post-ovarial). The subfam. Cyclocotylinae contains the genera: *Cyclocotyla* Otto (revived, with *C. bellones* Otto as type—Syn. *Choricotyle* v. Ben. & Hesse) with *C. neomaenis* and *C. prionoti* redescribed from N. America; *Cyclobothrium* Cerf. and *Heterobothrium* Cerf. in their original sense; *Pedocotyle* MacCallum; *Neoheterobothrium* n. g. created for those species of *Choricotyle* in which the vitellaria is absent from the haptor (*N. affine* (type) and *N. cynoscioni* redescribed); and *Cyclocotyloides* n. g. created for those *Choricotyle*-like species which lack genital armature (*Cyclocotyloides pinguis* (Linton) as the type and only species). N.G.S.

(29c) Lucker describes *Böhmiella wilsoni* n. sp. from *Sciurus carolinensis leucotis*, *S. carolinensis* and *S. niger niger*, in which there is extensive chitinization among the bursal rays of the male. The laterals are heavily chitinized at the base, less so at the tips: the externodorsals are chitinized at the base only, but chitinization extends internally and anteriorly towards the gubernaculum. P.A.C.

(29d) Krull & Jackson present experimental evidence supporting the theory that *Fasciola hepatica* migrate to the liver via the peritoneal cavity. If this is so the migration of flukes may produce obscure disease symptoms not normally attributable to fluke disease. P.A.C.

## 30—Lancet.

- a. WOLFE, H. R. I., 1943.—“Hydatid disease in Wales.” Year 1943, 1 (6252), 795–799.

(30a) Wolfe states that hydatid disease in man is more common in Wales than in the remainder of Great Britain. This he attributes partly to unsatisfactory supervision of slaughter houses and to the fact that the public has not been adequately informed of the necessary preventive measures. The 34 cases of hydatid treated at the Royal Infirmary, Cardiff, during 1926 to 1938 are reviewed and the symptoms, diagnosis, pathology and treatment discussed. Of the 34 cases, 16 were fatal. A.E.F.

### 31—Medical Officer.

- a. JOLLY, R. H. H., 1943.—“Trichiniasis.” 69 (2), 13-14.

(31a) The author reports again on the outbreaks of trichinosis in Wolverhampton and surrounding areas during 1940 to 1941, giving further details regarding the eating of raw sausages, the sources of pork products, the composition of sausages at that time (largely the flesh of sows or boars) and the positive skin tests performed by Beeson and Hawley on employees of sausage manufacturers. He also reports that *Trichinella* was found in two rats at the Wolverhampton Sewage Works and in 10 out of 56 human diaphragms from the Midlands. M.R.Y.

### 32—Parasitology.

- a. REES, G., 1943.—“The anatomy of *Anthobothrium auriculatum* (Rud.) (Cestoda) from *Raja batis* L.” 35 (1/2), 1-10.  
 b. LYSAGHT, A. M., 1943.—“The incidence of larval trematodes in males and females of the gastropod *Littorina neritoides* (L.) on the Plymouth Breakwater.” 35 (1/2), 17-22.  
 c. JONES, D. O., 1943.—“The anatomy of three digenetic trematodes, *Skrjabiniella aculeatus* (Odhner), *Lecithochirium rufoviride* (Rud.) and *Sterrhurus fusiformis* (Lühe) from *Conger conger* (Linn.)” 35 (1/2), 40-57.

(32a) Rees gives a very detailed and well illustrated account of the anatomy of *Anthobothrium auriculatum*, including not only the gross anatomy but also the musculature and nervous system in great detail. P.A.C.

(32b) Lysaght analyses her data [see Helm. Abs., Vol. X, No. 20a] on the distribution of infection in a population of *Littorina neritoides* by *Metacercaria* A and *Cercaria* B, and finds that the results indicate an unequal infection rate between the sexes in different size groups. This is explained partly by ecological factors and by the higher growth rate of females and their predominance in the larger size groups. She criticizes the conclusions of Rothschild [see Helm. Abs., Vol. X, No. 20b] that *Cercaria* B has a stimulating effect on the growth of the host in this species, and points out that sex reversal is unlikely. It is thought that the assumption of random distribution of either of the larvae among the population of snails is invalid, on ecological grounds. N.G.S.

(32c) Jones describes the detailed anatomy of *Skrjabiniella aculeatus*, *Lecithochirium rufoviride* and *Sterrhurus fusiformis*. A tabular comparison is given of some species of the genera *Proserhynchus* and *Skrjabiniella* to demonstrate their separation. It is suggested that the genera *Lecithochirium* and *Sterrhurus* be united. N.G.S.

### 33—Phytopathology.

- a. NEWHALL, A. G., 1943.—“Pathogenesis of *Ditylenchus dipsaci* in seedlings of *Allium cepa*.” 33 (1), 61-69.

(33a) Newhall studied the invasion of very young onion seedlings by the stem eelworm, *Ditylenchus dipsaci*, by means of sectionized material, paying particular attention to the regions entered by the parasite and the nature of the injury caused. He found that practically any region of the seedling from root-cap to unfolding cotyledon within the seed coat may be entered by direct penetration through the young epidermis, the presence of stomata not being essential for entry. The worms confine their activities to the parenchyma cells which they penetrate and destroy. They remain outside the primary vascular strand with its endodermal sheath. Evidence is presented that seedlings three weeks old are more resistant to attack than those a few days old. T.G.



## 34—Proceedings of the Helminthological Society of Washington.

- a. SWANSON, L. E. & TAYLOR, A. L., 1943.—“Control of cattle-parasitic and free-living nematodes by soil fumigation with methyl bromide.” 10 (1), 1-3.
- b. ANDREWS, J. S., TAYLOR, A. L. & SWANSON, L. E., 1943.—“Fumigation of soil with methyl bromide as a means of destroying infective stages and intermediate hosts of some internal parasites of mammals.” 10 (1), 4-6.
- c. DIKMANS, G., 1943.—“The occurrence of *Viannia viannai* Travassos (Nematoda: Heligmosomidae) in opossums in North America.” 10 (1), 6-7.
- d. DIKMANS, G., 1943.—“The lungworm, *Protostrongylus rushi* Dikmans, 1937, of the mountain sheep, *Ovis canadensis*.” 10 (1), 8-9.
- e. PRICE, E. W., 1943.—“North American monogenetic trematodes. VII. The family Discocotylidae (Diclidophoroidea).” 10 (1), 10-15.
- f. DOUGHERTY, E. C., 1943.—“Notes on the lungworms of porpoises and their occurrence on the California coast.” 10 (1), 16-22.
- g. SARLES, M. P., 1943.—“Overwinter loss of *Haemonchus contortus* larvae from a sheep pasture.” 10 (1), 22-23.
- h. KATES, K. C., 1943.—“Overwinter survival on pasture of preparasitic stages of some nematodes parasitic in sheep.” 10 (1), 23-25.
- i. ZIMMERMAN, jr., H. E., 1943.—“The occurrence of swine ascarid eggs in the intestinal contents and in the droppings of wild rats.” 10 (1), 25-26.
- j. BRAND, T. VON & CULLINAN, R. P., 1943.—“Physiological observations upon a larval Eustrongylides. V. The behavior in abnormal warmblooded hosts.” 10 (1), 29-33.

(34a) Methyl bromide has been used successfully by Swanson & Taylor to eliminate the larvae of cattle nematodes from some plots to be used for experimental work. The rate of application was one pound of the chemical to 63 square feet of soil under an impervious cover of glue-coated kraft paper. All the parasitic and free-living nematodes were killed to a depth of at least 12 inches.

R.T.L.

(34b) The embryos in the eggs of *Ascaris lumbricoides* var. *suus* and the infective larvae of Strongyloides and Oesophagostomum of pigs were destroyed by the use of methyl bromide as a soil fumigant. The cost limits its use other than for small areas where valuable breeding stocks or small animals such as foxes, mink or valuable dogs are kept in restricted runs. It might occasionally prove useful to clean up small centres of infection with human helminths.

R.T.L.

(34c) Dikmans records the presence of *Viannia viannai* in *Didelphis virginiana* in North America. It differs in a few minor points from the description given by Travassos but the differences are not considered to be important. This is the first time this helminth has been recorded from North America.

P.A.C.

(34e) In his revision of the family Discocotylidae Price recognizes 3 subfamilies: Discocotylinae, with *Discocotyle* Dies., *Octomacrum* Mueller, and *Diplozoon* v. Nordm.; Vallisinae n. subf. containing only *Vallisina* Par. & Per.; and Anthocotylinae, which is intermediate between Discocotylidae and Microcotylidae, containing *Anthocotyle* v. Ben. & Hesse, and *Winkenthughesia* n. g.—created for the species *Octobothrium thyrites* Hughes. The North American representatives described are: *Discocotyle salmonis* Shaffer, *Octomacrum lanceatum* Mueller and *Anthocotyle americanus* (MacCallum), emend. Price. *Discocotyle dorosomatis* Yamaguti is removed to Mazocraeidae and a new genus created for it: *Neomazocraes* n. g.

N.G.S.

(34f) Dougherty lists the lungworm species hitherto reported for the Odontoceti. In the 4 genera there are 14 species. Two other genera occur in Russian literature but are apparently without description. The status and synonymy of the various species is discussed in detail.

R.T.L.

(34g) Under natural pasture conditions at Beltsville, Md., it has been found that pasture contaminated during the summer by sheep with *Haemonchus contortus* and then left unoccupied from November to June failed to reveal larvae by direct microscopical examination, Baermann isolation, or by grazing with lambs. This gives additional support to the recent views that pastures rested overwinter are relatively, if not completely, free from infective *Haemonchus* larvae.

R.T.L.

(34h) Experiments at Beltsville, Md., show that the larvae of *Oesophagostomum*, *Cooperia* and *Bunostomum* do not survive the winter on rested pastures and that those of *Haemonchus* and *Trichostrongylus* either do not survive or survive in very small numbers depending on (i) density of pasture infection, (ii) severity of winter, and (iii) length of exposure. The preparasitic stages of *Ostertagia*, *Nematodirus* and *Trichuris* are the most resistant to the effects of winter.

R.T.L.

(34i) Eggs of pig *Ascaris lumbricoides* have been found in the intestinal contents and droppings of wild rats and become embryonated and infective on culture in tap water. Rats may therefore be the means of disseminating ascarids and possibly other helminth infestations of farm animals.

R.T.L.

(34j) Von Brand & Cullinan have attempted to infect chickens, ducks and rats with larval *Eustrongylides* sp. from *Fundulus heteroclitus*. Oral, subcutaneous and intra-peritoneal infections all failed, though in some cases the worms lived long enough to perform extensive migrations, killing the host by damaging internal organs. Ducks were very resistant, quickly killing and enveloping the parasites in thick-walled cysts.

W.P.R.

### 35—Proceedings of the Society for Experimental Biology and Medicine.

- a. WATT, J. Y. C., 1943.—“Active immunization of rats against *Nippostrongylus muris*.” 52 (2), 67–72.

(35a) Pied rats have been made immune to infestation with *Nippostrongylus muris* by vaccination with antigens made from extracts of adult worms. This immunity is effective against the pulmonary and the intestinal phases. There is no possibility of premunition.

P.A.C.

### 36—Public Health Reports. Washington.

- a. WRIGHT, W. H. & BOZICEVICH, J., 1943.—“Experiments in the cooking of garbage for the destruction of trichinae in pork scraps.” 58 (10), 396–404.

(36a) If garbage is boiled for 30 minutes in an open container it will kill trichina larvae in pieces of pork up to 3 inches thick and probably in larger pieces if the garbage is allowed to cool gradually.

R.T.L.

### 37—Report of the Management Committee, Alan, Duke of Northumberland Memorial Fund.

- a. STEWART, W. L., 1943.—“Research work into sheep and lamb diseases, with a report on grass sickness in horses.” 9th Report, 36 pp.

(37a) The report includes the following research items of helminthological interest: (i) Evidence is supplied to show the importance of worms in association with mineral deficiencies in the causation of “Border Pining” in sheep. (ii) A preliminary report on extensive trials to test the effect of phenothiazine and mineral supplements on weight increases in lambs. Both these treatments gave marked weight increases but the best results were obtained when phenothiazine was used in combination with the administration of a complete mineral solution. (iii) Black rush is a disease which is common in hogs during the winter months, particularly on hill farms in the northern counties of England. The condition is considered to be due to trichostrongyles and may also be associated with the low nutritional level obtaining in hill hogs during the severe winters. Treatment with phenothiazine in December or January is recommended.

D.O.M.

### 38—Revista Clínica Española.

- a. LEY, A. & PONS TORDERA, J., 1943.—“Contribución al estudio de la hidatidosis encefálica y espinal.” 8 (3), 181–190.  
b. MARTÍN SÁNCHEZ, A., 1943.—“Sobre un caso autóctono de bilharziosis vesical observado en la isla de La Palma (Canarias).” 8 (3), 196–199.  
c. PIULACHS, P., AZNAR, E. & MUÑOZ, T., 1943.—“Equinococosis externas (especialmente de los músculos y tejido celular subcutáneo).” 8 (4), 253–261.



(38b) The first indigenous case of *Schistosoma haematobium* infection is reported from the island of Las Palmas, Canaries.

R.T.L.

### 39—Revista Médica de Chile.

- a. LA MAZA S., V. DE, BARROSO C., E. & COSTA M., A., 1943.—“Parasitosis intestinal en el niño.” 71 (1), 41–48.

### 40—Schweizerische Medizinische Wochenschrift.

- a. SEMADENI, B., 1943.—“Histologischer Befund bei einem Fall von zahlreichen Mikrofilarien beider Augen.” 73 (3), 75–77.

(40a) Semadeni gives further details of the case of ocular onchocerciasis recorded by him in 1940 in the same journal [see Helm. Abs., Vol. IX, No. 47a]. The patient died in 1941, as the result of a mountaineering accident, and a histological examination of one eye was carried out. The results of this are recorded, and 10 microphotographs are included. Microfilariae were found in the iris, ciliary body, conjunctiva, episclera, and in the sheath of the optic nerve, as well as in the cornea and anterior chamber.

A.E.F.

### 41—Science.

- a. WATT, J. Y. C., GOLDEN, W. R. C., OLASON, F. & MLADINICH, G., 1943.—“The relationship of vitamin A to resistance to *Nippostrongylus muris*.” 97 (2521), 381–382.  
b. CARTER, W., 1943.—“A promising new soil amendment and disinfectant.” 97 (2521), 383–384.

(41a) Watt et al. find that in the absence of vitamin A laboratory rats have a lowered resistance to primary and secondary infestations with *Nippostrongylus muris*. Control animals on full diet all lived until they were slaughtered 12 days after infestation: they contained fewer worms in the intestine and more in the lungs than did those rats which had first been depleted of their stores of vitamin A. Some of these experimental animals died before the end of the experiment. Plasma from deficient animals had no protective value.

P.A.C.

(41b) Carter obtained indications of favourable results in preliminary soil disinfection tests with a mixture of 1–3 dichloropropylene and 1–2 dichloropropane. The material was obtained in two grades from the Shell Development Company, is cheaper and simpler to handle than chloropicrin and has no commercial use. Injections of 200 lb. per acre of the crude material at points one foot apart in soil heavily infested with *Heterodera marioni* growing rapidly maturing vegetable crops gave “a very real measure of control” both when the soil was covered with asphalt impregnated paper and when it was not sealed. Favourable growth response was also obtained in pineapple fields when 150 lb. of the pure grade mixture per acre were injected through the mulch paper. Results were at least as beneficial as with equivalent applications of chloropicrin, but were not fully evident until over a year after treatment. It is suggested that the main function of such treatments is to amend the biological complex of the soil, with ultimate beneficial effects on plant health. The effects of the chemical on specific organisms and under varying conditions remain to be tested.

M.T.F.

### 42—South African Medical Journal.

- a. MEILLON, B. DE & GILLESPIE, J. C., 1943.—“Note on a human eye worm.” 17 (1), 5–6.

(42a) A single female filaria measuring 115 mm. in length, provisionally diagnosed as *Filaria conjunctivae*, was removed from the subconjunctival tissues just above the lower fornix of the right eye of a patient who had travelled extensively in the Belgian Congo, Uganda and Kenya before arriving in South Africa in 1941. There were no microfilariae in the blood, nor was there any eosinophilia. Urticaria was present but could not be definitely associated with the helminth infection.

R.T.L.

### 43—Southern Medical Journal.

- a. VAN STUDDIFORD, M. T., 1943.—“Intestinal parasites and skin diseases.” 36 (3), 238–240.



(43a) Cases of alopecia areata, of chronic acne, and of hookworm anaemic ulceration of the legs recovered after helminth treatment. R.T.L.

#### 44—Transactions of the American Microscopical Society.

- a. MARKELL, E. K., 1943.—“Gametogenesis and egg-shell formation in *Probolitrema californiense* Stunkard, 1935 (Trematoda: Gorgoderidae).” 62 (1), 27–56.
- b. HUNNINEN, A. V. & CABLE, R. M., 1943.—“The life history of *Podocotyle atomon* (Rudolphi) (Trematoda: Opecoelidae).” 62 (1), 57–68.
- c. LINCICOME, D. R., 1943.—“Observations on the adult of *Arhythmorhynchus duocinctus* Chandler, 1935 (Polymorphidae, Acanthocephala).” 62 (1), 69–71.
- d. MORGAN, B. B., 1943.—“The Physalopterinae (Nematoda) of Aves.” 62 (1), 72–80.

(44b) Hunninen & Cable have proved the life-cycle of *Podocotyle atomon* and discuss its ecology. *Anguilla rostrata* and *Apeltes quadracus* have been added to the long list of definitive hosts. *Littorina rudis* harbours simple sporocysts containing the ctylomicrocercous cercariae (very similar to those of *Opecoeloides manteri*) which penetrate and encyst in the anterior haemocoel of *Gammarus* sp., *Carinogammarus mucronatus* and *Amphithoe longimana*. The metacercariae grow considerably, and may become progenetic, though they are infective to eels in 4 weeks. The excretory system does not change in post-cercarial life from the type 2 [(2+2)+(2+2)]. The intestinal branches are connected distally with the excretory vesicle by strands of tissue, though their lumina are not confluent as in *Opecoeloides* and some other genera. N.G.S.

(44c) Lincicome describes the morphology of the adult *Arhythmorhynchus duocinctus* from *Nycticorax nycticorax hoactli*, the immature form of which has been described from the mesenteries of a fish, *Paralichthys lethostigmus*. The proboscis, hooks and body spines reach their adult form in the immature stage: other differences in size are due to development and maturation. P.A.C.

(44d) Morgan gives a key for the identification of 10 species of *Physaloptera* found in birds in North America, together with a parasite-host list. He discusses *Physaloptera acuticauda*, *P. alata* and *P. mexicana*. P.A.C.

#### 45—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. YARWOOD, G. R. & ELMES, B. G. T., 1943.—“*Paragonimus* cyst in a West African native.” 36 (6), 347–351.

(45a) Two cases of paragonimiasis have been recorded during the past 15 years in the Cameroons. A third case is now reported from the Ahoada district of Owerri Province, Southern Nigeria. A cyst removed from the side of the neck contained *Paragonimus* eggs of which a microphoto is given. There were symptoms suggesting a lesion of the left cerebrum posterior to the corpora quadrigemina. There was also middle ear deafness associated with the cysts in the neck. No eggs were found in the sputum. R.T.L.

#### 46—Veterinary Medicine.

- a. HOWELL, C. E. & BRITTON, J. W., 1943.—“Seasonal anthelmintic treatment of horses.” 38 (1), 8–11.
- b. EVELETH, D. F., EVELETH, M. W. & GIFFORD, R., 1943.—“Preliminary studies on the use of phenothiazine in the control of lung worms in sheep and goat.” 38 (2), 63–66.
- c. HADLEY, F. B., 1943.—“Incidence of worm parasites in a large stud of horses.” 38 (3), 88–90.
- d. HABERMANN, R. T., 1943.—“The effect of phenothiazine on pregnant goats and their offspring.” 38 (3), 96–99.
- e. ANON, 1943.—“War emergency stresses need for control of nodular worms.” 38 (3), 99.
- f. ANON, 1943.—“Authoritative statements concerning trichinosis.” 38 (4), 140–143.

(46a) Howell & Britton recommend that horses from 1 to 4 years of age should be treated with phenothiazine in July, December and April; those from 5 to 10 in July and January; and those over 10 in July or August each year. Small repeated doses in a grain ration are considered to be more suitable for brood mares and should be given soon after foaling. For foals, small repeated doses at weaning and at 11 to 14 months of age are recommended. The



authors point out that the routine treatment suggested applies to horses kept under conditions similar to those obtaining at the University of California's Arabian Horse Ranch where the researches were carried out. D.O.M.

(46b) Eveleth et al. found that intratracheal injections of phenothiazine in glycerol and alcohol destroyed larval and adult lungworms in sheep and that the drug caused no great harm to the host, provided complicating factors such as advanced pneumonia or caseous lymphadenitis were absent. Further work is necessary to establish dosage and frequency of treatment. D.O.M.

(46c) Studies on 71 horses at a stud in Wisconsin showed 100% infected with *Trichonema* spp., 80% with *Strongylus* spp., 76% with *Parascaris equorum*, 32% with *Anoplocephala* spp. and 15.5% with *Strongyloides westeri*. The last named species was found only in foals up to 1 year old. D.O.M.

(46d) Habermann found that daily doses of 15 to 20 g. of phenothiazine given to pregnant goats over a period of 12 to 27 days, during which parturition took place, had no toxic effect either on the does or on their kids. The lactation also appeared to be normal. Larger doses of 25 to 35 g. given at varying times during gestation were also without effect on the animals. The milk from goats receiving the daily dose of 15 g. turned a slight red colour on exposure to the air for about 5 hours but this had no toxic effects on the kids. D.O.M.

(46e) Nodular worm disease in sheep renders the intestines unsuitable for use in the manufacture of catgut for surgical sutures. The importance of the control of the disease, particularly in wartime, is therefore obvious. Rotational grazing and treatment with phenothiazine are recommended. A.E.F.

(46f) This article consists of quotations from recent papers on the control of trichinosis, emphasizing the importance of adequate cooking of pork scraps before they are fed to pigs. A.E.F.

#### 47—Veterinary Record.

- a. STEWART, W. L. & CROFTON, H. D., 1943.—“Parasitic gastritis in sheep. Field trials with phenothiazine and mineral supplements.” 55 (1), 3-4.
- b. FOGGIE, A., 1943.—“On the effect of repeated dosing of sheep with phenothiazine.” 55 (1), 5-6.
- c. DAVIDSON, C. B., 1943.—“Fatal strongyloidosis in a foal.” 55 (1), 6.
- d. REES-MOGG, G., 1943.—“Copper sulphate tolerance of sheep.” [Correspondence.] 55 (3), 43-44.
- e. WATSON, J. F., 1943.—“Winter trichostrongylosis in the north.” 55 (4), 49.
- f. SPRIGGS, D. N., 1943.—“Copper sulphate tolerance of sheep.” [Correspondence.] 55 (5), 72.
- g. TAYLOR, E. L., 1943.—“The interaction of nutrition and parasitism with special reference to parasitic gastritis.” 55 (10), 117-119.
- h. BINGHAM, M. L., OTTAWAY, C. W. & SENIOR, M., 1943.—“Two cases of death due to parasitic aneurysms.” 55 (12), 140.
- i. FOGGIE, A., 1943.—“Disadvantage of disease production to parasitism: some exceptions.” [Correspondence.] 55 (13), 154.
- j. TAYLOR, E. L., 1943.—“Disadvantage of disease production to parasitism.” [Correspondence.] 55 (14), 164.
- k. LAPAGE, G., 1943.—“The effects of phenothiazine on young pigs.” 55 (17), 184-186.

(47a) Lyle Stewart & Crofton describe experiments on two lowland farms where the differential effects of minerals and of phenothiazine in lambs were tested by live weights and worm egg-counts. At Farm II, 5 groups of 20 lambs were given: (i) 15 g. phenothiazine monthly; (ii) 5 g. monthly; (iii) 20 ml. mineral solution fortnightly (salts of Co, Mn, Cu, Fe, and I); (iv) treatments (i) & (iii); (v) no treatment. Phenothiazine reduced egg-counts but minerals did not; minerals and phenothiazine both led to weight-gains. The 5 g. dose of phenothiazine was ineffective. R. A. Fisher adds a note showing (i) that failure of randomization at Farm I upset the results, and (ii) that at Farm II minerals and phenothiazine together gave an additive effect with no appreciable interaction. Crofton adds the working involved in applying Fisher's “Analysis of Covariance” technique to egg-counts. B.G.P.

(47b) Foggie obtained excellent results with 10 g. doses of phenothiazine in a severe outbreak of parasitic gastritis in sheep. Subsequently, fortnightly dosing extending from



November until the following May was continued in half the flock but this had no further effect on the residual infection. The untreated half gave equally good results as judged by weight increases and egg-counts. No symptoms of toxic action attributable to the repeated dosing with phenothiazine were observed in any of the sheep. D.O.M.

(47c) Davidson gives the clinical symptoms and the post-mortem findings in the case of a 3-months-old foal heavily parasitized with *Strongyloides westeri*. D.O.M.

(47e) Watson records an outbreak of winter trichostrongylosis or "black-rush" among hogs in Kinross-shire, Scotland. Post-mortem examination showed a heavy infestation of trichostrongyle species in the small intestine. Treatment with copper sulphate and nicotine had given poor results but phenothiazine proved very satisfactory. The author attributes the outbreak to dietetic errors and to overstocking on a poor pasture. D.O.M.

(47g) In an address to veterinarians Taylor considers some aspects of the problem of parasitic gastritis. He takes it almost as axiomatic that it is not of advantage to the parasite to cause disease symptoms and mentions the harmonious relationship between the rabbit and *Coenurus serialis* as an example. In the case of parasitic gastritis where the relationship is not quite so harmonious there is, however, a good deal of adjustment and he is of the opinion that the amount of food they extract from the contents of the gut is negligible. They do, however, produce an anti-enzyme which upsets the digestion of the host. Parasitic helminths on the whole are long lived creatures, due to their constant environmental conditions: a balance usually develops preventing over-infestation which can however be upset by various factors of diet, when clinical symptoms may occur. Anthelmintic treatment of lambs soon after weaning, together with supplementary additions to the diet, will usually prevent the onset of disease symptoms thus preventing much unnecessary loss. P.A.C.

(47i) Foggie disagrees with Taylor's view [see preceding abstract] that it is always disadvantageous to the parasite to produce disease conditions in the host, citing *Coenurus cerebralis* in sheep, and *Trichinella spiralis* in a variety of hosts. It is to the advantage of the parasite to make the host easy prey to the carnivorous final host. In the case of *Coenurus serialis* the presence of a very large number of cysts would probably kill the host before the parasites were infective. P.A.C.

(47j) Taylor maintains that, in the main, successful parasitism necessitates the development of a host-parasite adaptation so as to lessen the risk of destroying the host species. He agrees that *Coenurus cerebralis* might be cited as an exception to this generalization but points out that other cystic cestodes rarely cause disease in domestic animals. D.O.M.

(47k) Lapage reviews the literature dealing with the toxicology of phenothiazine in pigs and relates some further experiments from which he concludes that "the responses of individual pigs to phenothiazine, whatever the dose and whatever the age and weight of the pigs, are, like those of individual horses, cattle and human beings, erratic and incalculable". R.T.L.

#### 48—Zeitschrift für Immunitätsforschung und Experimentelle Therapie.

a. NAGEL, A., 1943.—"Ueber spezifische und unspezifische serologische Befunde bei der Trichinose des Menschen." 102 (6), 424-432.

(48a) As a result of immunological tests carried out on individuals involved in an outbreak of trichinellosis Nagel shows that precipitin and complement fixation tests made from 2 months to over a year after infection are reliable. He was unable to test the value of these reactions in the early diagnosis of the disease. It is also demonstrated that the serum of trichinous patients contains substances which will agglutinate intestinal bacteria, particularly those of the typhus group: this is a fact of considerable importance in the differential diagnosis of trichinellosis. A.E.F.